Inside Balloons:
How does air exerts pressure?

Learning objectives:
- Students will be able to describe and draw what air looks like at a microscopic level.
- Students will be able to explain how air applies pressure and predict how various changes affect the pressure.

Activity:
1. Discuss your ideas about "What the word pressure means?" with your partner.
   Write down your ideas after discussion.

2. Explore the **Gas Properties Simulation**.

   Draw a picture of what you think the air inside this classroom looks like if you could zoom really, really close in on the air.

   Use words to help describe what is happening in this picture.

   _____
   _____
   _____
   _____
   _____
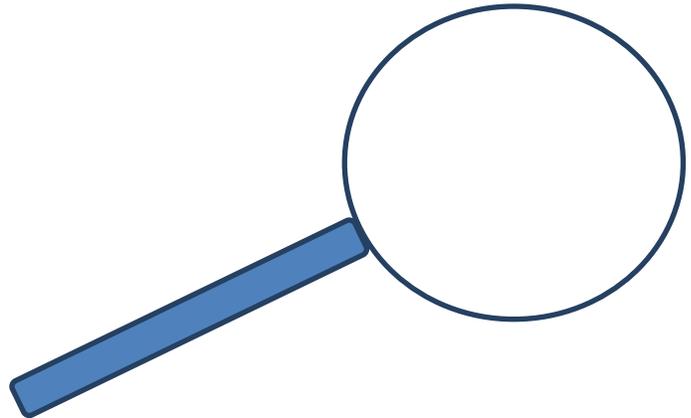
3. The air inside a balloon will apply pressure on the walls of the balloon.
   The air inside the box in the Gas Properties Simulation is applying pressure on the lid.

   Suppose you were inside the box in the simulation, pushing up on the lid. **How is that similar to, or different than, what the air is doing?**

   _____
   _____

_____
_____

4. Balloons can pop!
   How many different ways can you find to blow the top off of the container in the sim? _____

   For each method (up to 3), record the **reading on the pressure gauge** when the top flew off, describe your method and your ideas about **how** the air is able to blow the top off.

Method #	Describe your method	Describe what's changed about the particles are hitting the lid
1 Pressure reading =		
2 Pressure reading =		
3 Pressure reading =		

5. Looking at your observations from Question #4, **which factors do you think affect air pressure?** Justify your answers with evidence from the simulation.

_____
_____
_____
_____
_____
_____

6. Compare the 4 cases and observations about pressure below.
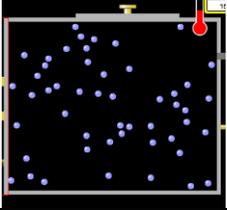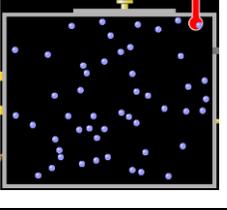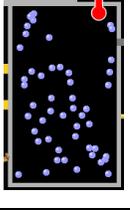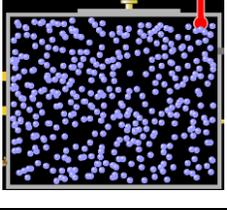
The Comparisons			
Starting condition	**Hotter particles**	**Particles in smaller box**	**More, hotter particles**
Low Temperature	High Temperature	Low Temperature	High Temperature
Regular size box	Regular size box	Half size box	Regular size box
The Observations			
LOW PRESSURE	MEDIUM PRESSURE	MEDIUM PRESSURE	VERY HIGH PRESSURE
Use the simulation to develop a <u>General Explanation</u> for **<u>how</u> air particles apply pressure that can explain the differences in the cases above.** **Write your general explanation here:**			
Use your general explanation to explain observations for each case:			